

April 4, 2004

Commissioner for Patents

P.O.Box 1450

Alexandria VA 22313-1450



Petition to patent examiner Maribel Medina

Amendments of claims and specification, suggested by the examiner, have been made.

Prior art, provided by the examiner, has been shown to be inapplicable to the present case

Marked up version of the amended claims as required by 37 CFR 1.121(c)(ii) is enclosed within, as well as original claims and a clean copy of the specification.

A separate copy (two pages) of the amended claims are included.

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Very respectfully,

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providing said gas containing water vapor and organic vapors, and

providing said reformer catalyst, and

subjecting said gas containing water vapor and organic vapors to said reformer catalyst, forming a gas containing water vapor, hydrogen and carbon monoxide, and

providing a steam shift catalyst, and

subjecting the heretofore formed gas containing water vapor, hydrogen and carbon monoxide to said steam shift catalyst, and

reacting carbon monoxide and water vapor within said gas by said steam shift catalyst to shift carbon monoxide to form a gas containing hydrogen and carbon dioxide, and

providing a solution for substantially removing carbon dioxide from the gas containing hydrogen and carbon dioxide, and

mingling the heretofore reacted gas, substantially devoid of carbon monoxide, containing carbon dioxide and hydrogen, with said solution to form a solution containing a bicarbonate, and

separating the gas, containing hydrogen, from the solution containing a bicarbonate from the carbon dioxide, and

subjecting the solution containing a bicarbonate to heat to form gaseous carbon dioxide and a solution for recycle thereby producing a gas containing hydrogen substantially devoid of carbon monoxide derived from a biomass.

2. (amended) The method of claim 1 wherein said gas containing water vapor and organic vapors is derived from pyrolysis of said biomass.

c. Accordingly appropriate correction for claim 1 and claim 2, as required, have been presented.

4. and 5 Concerning rejection of claims 6-15 under the second paragraph of 35 U.S.C. 112, the following amendments are presented;

a.6. (amended) The method of claim [2] 5 wherein the carbonaceous residue reacts with water to form carbon monoxide

b 8. (amended) The method of claim 1 wherein said biomass is selected from the group consisting of woody material, waste paper, [and] MSW and mixtures [including an individual or combination] thereof .

c 9. (amended) The method of claim 1 wherein said solution for removing carbon dioxide is selected from the group consisting of aqueous bases, [and] aqueous salts and mixtures [including an individual or combination] thereof.

d 10. (amended) The method of claim 1 wherein hydrogen containing water vapor, substantially devoid of carbon monoxide [...] is subjected to scrubbing within an absorbent for scrubbing water vapor within gaseous hydrogen to furnish a gas, [containing] consisting of hydrogen [separated from the absorbent,] substantially devoid of water vapor, separated from the absorbent Thus, claim 10. is amended to render the claim both definite and clear

e 12. (amended) The method of claim 10 wherein the absorbent for scrubbing is selected from the group consisting of silica gel, [and] alumina and mixtures [including an individual or combination] thereof.

f 14. (amended) The method of claim 13 wherein the fuel cell generates electricity and said electricity is [subjected to storage within] stored in a storage battery.

g 17. (amended) The method of claim 1 wherein the organic vapor is selected from the group consisting of hydrocarbons, methanol, [and] acetic acid and mixtures [including an individual or combination] thereof.

Accordingly corrections, suggested by the examiner, for claims 6-15 and 17, excluding claims 7,11, and 16, have been presented.

6 and 7. Regarding rejection of claims 1, 8-12 and 17-20 under 35 U.S.C. 102(b), as being anticipated by Fuderer in US patent 4,553,981. Pertaining to the teaching of Fuderer, the practice to produce a gas containing hydrogen is presented. In addition, this teaching specifies well known procedures for reforming hydrocarbons(considerably different than an organic vapor) and steam splitting carbon monoxide and removal of carbon dioxide from the gas. This teaching concludes within claim 1. This claim presents a somewhat complicated process including cooling, compression, pressurization, totally different than the present invention. For example, mention of biomass and organic vapors are topics which are lacking in the teachings of Fuderer. The teachings presented above are regarded as immaterial to claim 1, within the present invention. Therefore assertion that claim 1, within the present invention, is unpatentable is rejected.

8. and 9. Regarding rejection of claims 1,2, 5, 8-12 and 17-20 under 35 U.S.C. 103(a) and the prior art presented by Yamaguchi et al. within US patent No. 4,436,532; and in view of Fuderer in US patent 4,553,981, the following comments are contributed;

It is noted that methane is a gas, rather than an organic vapor. Hydrocarbons and methane gas, presented by Yamaguchi et al. within claim 1, are substantially different than the unconstrained organic vapor subjected to reforming, as claimed in claim 1 of the present application. Yamaguchi et al. specifies that the gasses are subjected to low temperature steam reforming to form methane-rich

gasses. This procedure is considerably unlike that claimed in the present application. Furthermore, teachings of Yamaguchi et al., in the columns and lines presented by the examiner, are inappropriate for application in the present application, claim 1. Thus, the statement of unpatentability is rejected.

10. Regarding rejection of claims 3, 4, 6, 7 and 13-18 under 35 U.S.C. 103(a) as being unpatentable over Yamaguchi et al. within US patent No. 4,436,532; and in view of Fuderer in US patent 4,553,981, and further in view of US patent No. 6,209,494; by Manikowski et al., the ensuing comments are presented;

Topics, contributed by the examiner include, pyrolysis, electrical heat, vehicle, and fuel cells which are subjects devoid within claim 1 of the present application. Furthermore, teachings of Manikowski et al., are different than claim 1 of the present application. Dependence of combined multiple references is evidence of novelty and unobviousness, as presented under remarks.

11. In conclusion, an inquiry, concerning this communication from the examiner, is unforeseen at this time.